

PRE-APPEAL BRIEF REQUEST FOR REVIEW		Docket Number (Optional) 0425-0846P	
		Application Number 09/942,798-Conf. #9781	Filed August 31, 2001
		First Named Inventor Kazuyuki MATSUOKA et al.	
		Art Unit 1755	Examiner A. B. Felton
<p>Applicant requests review of the final rejection in the above-identified application. No amendments are being filed with this request.</p> <p>This request is being filed with a notice of appeal.</p> <p>The review is requested for the reason(s) stated on the attached sheet(s). Note: No more than five (5) pages may be provided.</p> <p>I am the</p> <p><input type="checkbox"/> applicant/inventor. <input type="checkbox"/> assignee of record of the entire interest. See 37 CFR 3.71. Statement under 37 CFR 3.73(b) is enclosed. (Form PTO/SB/96)</p> <p><input checked="" type="checkbox"/> attorney or agent of record. Registration number <u>21,066</u></p> <p><input type="checkbox"/> attorney or agent acting under 37 CFR 1.34. Registration number if acting under 37 CFR 1.34. _____</p>			
 <u>Raymond C. Stewart</u> <u>Typed or printed name</u>			
<u>(703) 205-8012</u> <u>Telephone number</u> <u>January 19, 2007</u> <u>Date</u>			
<small>NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below.</small>			
<input type="checkbox"/> *Total of <u>1</u> forms are submitted.			

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Kazuyuki MATSUOKA et al.

Application No.: 09/942,798

Confirmation No.: 9781

Filed: August 31, 2001

Art Unit: 1755

For: GAS GENERANT COMPOSITION

Examiner: A. B. Felton

REQUEST FOR PRE-APPEAL BRIEF CONFERENCE

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

In response to the final Office Action mailed August 21, 2006, the appellant respectfully requests a pre-appeal brief conference. This request is being filed concurrently with a Notice of Appeal.

[II] Remarks

Applicant requests withdrawal of the rejections of record as being clearly erroneous in fact and in law for the reasons set forth below.

[III] Status of Claims

Claims 1-3, 9-17, 24-29 and 32 are pending and await further action on the merits. Claims 14, 16, 17, 27 and 28 have been withdrawn from consideration as being drawn to non-elected subject matter.

[III] Three Grounds Of Rejection To Be Reviewed

1) The first ground of rejection to be reviewed is the rejection of claims 1-3, 9-12, 15, 24-26, 29 and 32 under 35 U.S.C. 103(a) as being unpatentable over Highsmith et al. (U.S. Patent 5,682,014) in view of Castagner et al. (U.S. Patent 5,160,163) and Takase et al. (U.S. Patent 4,572,178) (hereinafter "Rejection (1)").

2) The second ground of rejection to be reviewed is the rejection of claims 1-3, 9-12, 15, 24-26, 29 and 32 under 35 U.S.C. 103(a) as being unpatentable over Taylor et al. (U.S. Patent 5,467,715) in view of Plantif et al. (U.S. Patent 3,964,256), Castagner et al. (U.S. Patent 5,160,163) and Takase et al. (U.S. Patent 4,572,178) (hereinafter "Rejection (2)");

3) The third ground of rejection to be reviewed is the rejection of claim 13 under 35 U.S.C. 103(a) as being unpatentable over Taylor et al. (U.S. Patent 5,467,715) in view of Plantif et al. (U.S. Patent 3,964,256), Castagner et al. (U.S. Patent 5,160,163), and Takase et al. (U.S. Patent 4,572,178) as applied to claims 1-3, 9-12, 15, 24-26, 29 and 39 above, and further in view of Mitson et al. (U.S. Patent 5,518,054) (hereinafter "Rejection (3)").

The instant invention is drawn to a gas generant composition comprising manganese dioxide having a specific surface area not less than 50 m²/g. Applicants maintain the position that the cited references fail to fairly suggest the use of the inventive manganese dioxide having a specific surface area of not less than 50 m²/g *in* (or as part of) the gas generant composition.

The Examiner notes that the primary references to Taylor et al. and Highsmith et al. only teach the use of a metal oxide and do not suggest the use of manganese dioxide having a specific surface area not less than 50 m²/g, as presently claimed. For example, Highsmith et al. generically teach the use of a "metal oxide" (see column 4, lines 41-57) as a catalyst for use in the gas generant composition, and exemplifies in Examples 1-5 the use of copper oxide. In order to cure this deficiency, *the Examiner needs to rely on Castagner et al. and Takase et al.* However, Castagner et al. and Takase et al. do not cure the deficiency of the primary references of Taylor et al. and Highsmith et al.

Castagner et al., teach an airbag device containing HOPCALITE, which is a mixture of copper oxide and manganese oxide. Takase et al. teach that HOPCALITE has a specific surface area of 217 m²/g, see column 5, lines 1-5. However, Applicants note that Castagner et al. use the HOPCALITE in the air bag separate from the gas generant composition. Upon careful review of all of the cited references, one cannot find sufficient motivation for the skilled artisan to use the HOPCALITE *in* the gas generant composition, as presently claimed.

(III-A) Rejection (1): The Present Invention is Patentable over the Combination of Highsmith, Castagner and Takase

Applicants note that the artisan would not be motivated to use HOPCALITE in the gas generant composition of Highsmith et al. based on the particular properties of HOPCALITE.

The artisan would be aware that HOPCALITE would be deactivated under wet conditions, therefore the gas should be dry beforehand. For example, US 4,317,460 (attached as Appendix A to the November 21, 2006 Amendment) teaches (in col 1, lines 24-31) the following:

Many of the materials discussed in that report are based on hopcalite, which contains copper oxide and manganese dioxide and is thus an oxidant rather than a catalyst but catalysts such as palladium on molecular sieve were also tested. The report concluded that all the tested materials were unsatisfactory. Thus even at 80°C, hopcalite only removed 60% of the carbon monoxide in the tests described and was deactivated by water....

Furthermore, the artisan would know that HOPCALITE would be deactivated at high temperatures. For example, US 4,238,460 (attached as Appendix B to the November 21, 2006 Amendment) teaches (in col 2, lines 58-66) the following:

The waste gas purification unit of this invention is preferably a catalytic oxidation unit, and more preferably, one wherein the catalyst comprises manganese oxide and copper oxide. An especially preferred catalyst is a hopcalite catalyst. When using the preferred hopcalite oxidation catalyst, it is important to maintain temperature of the catalyst during use between about 140 °C. and about 540 °C. Temperatures above about 540 °C. can result in rapid degradation of the catalyst.

Thus, it is clear that HOPCALITE is moisture and temperature sensitive.

Highsmith et al. invariably use bitetrazolamine as a fuel (see Abstract), which produces H₂O when it reacts with the oxidizer. Thus, the combustion gas of Highsmith et al. includes H₂O, which would deactivate HOPCALITE's ability to reduce the toxic gases.

Furthermore, it could be estimated that the combustion temperature of bitetrazolamine is ~1000-1500K when it is combusted. Based on the teachings of USP 4,238,460, as reproduced above, these high temperatures would cause the HOPCALITE to degrade.

The artisan, with a complete understanding of the heat sensitivity of HOPCALITE, would understand that the HOPCALITE is placed in the air bag, since the combustion gas discharged in the air bag would be reduced in temperature due to adiabatic expansion. Accordingly, to move the HOPCALITE from the air bag to the gas generant composition (as the Examiner alleges would be obvious) is counterintuitive. Thus, there would be no motivation to include the HOPCALITE of Castagner et al. in the gas generant composition of Highsmith et al. as the Examiner alleges in view of the fact that the gas generant composition of Highsmith et al. produces water and burns at temperatures which would significantly reduce the effectiveness of the HOPCALITE.

For the reasons stated above, the combination of Highsmith et al. with Castagner et al. and Takase et al. does not motivate the artisan to prepare the instant gas generant composition containing manganese oxide because Highsmith et al.'s composition would produce H₂O and high combustion temperatures which are deleterious to the performance of HOPCALITE. Therefore, it is not appropriate to combine Highsmith et al. with Castagner et al. and Takase et al., because the combination is not obvious.

Thus, Rejection (1) amounts to clear error on the Examiner's part and withdrawal of Rejection (1) is respectfully requested.

[III-B] Rejections (2) and (3): The Present Invention is Patentable over the Combination of Taylor, Plaintiff, Castagner and Takase and optionally Mitson.

For the similar reasons stated above, the artisan would not be motivated to use the HOPCALITE of Castagner et al. in the gas generant composition of Taylor et al., as presently claimed. That is, the artisan would not be motivated to use the HOPCALITE of Castagner et al. in the gas generant composition of Taylor et al., since the high combustion temperatures used by Taylor et al., i.e., 1600K, would result in the rapid degradation of the HOPCALITE as taught by US 4,238,460 (in col 2, lines 58-66, which is reproduced, *supra*).

The Examiner relies on Plaintiff for motivation to use manganese oxide in the gas generant composition, as presently claimed. The Examiner states at page 4, first paragraph of the outstanding Office Action that:

Plantif et al. teaches gas generating composition that use various additives to decrease toxic gases such as CO. Plantif teaches that manganese dioxide lowers the decomposition temperature.

Applicants have carefully considered the teachings of Plantif et al. and believe that the Examiner's comments are based on a misunderstanding. A careful review has realized that the statement of Plantif in col. 2, line 15 to col. 3, line 11 teaches that the manganese dioxide is used in the coolant and is not used as part of the gas generant composition, as presently claimed. The Examiner will note that none of the Examples use manganese dioxide (or iron oxide or copper oxide for that matter) in the gas generant composition.

Plantif's mechanism is that the combustion gas generated in a high temperature is cooled down by passing the combustion gas through the coolant for generating O₂. In order to decompose the coolant and generate O₂, the propellant should be combusted at a high temperature.

To the contrary, Taylor states that the fuel component and oxidizers are selected to achieve a low combustion temperature, so as to minimize production of toxic oxides during combustion. The combustion itself should be conducted at a lower temperature, which is distinct from cooling the already combusted gas (which was combusted at a high temperature of above 1600K, see the table at column 4, lines 15-23 of Taylor et al.). Therefore, Taylor's mechanism is quite different from (opposite to) Plantif et al's mechanism.

Therefore, Applicant believes that there is no motivation to combine and the combination suggested by the Examiner is not appropriate.

Thus, Rejections (2) and (3) amount to clear error on the Examiner's part and withdrawal of Rejections (2) and (3) is respectfully requested.

Dated: January 19, 2007

Respectfully submitted,

By 
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